California Regional Water Quality Control Board
Los Angeles Region
(50 Years Serving Coastal Los Angeles and Ventura Counties)

Winston H. Hickox
Secretary for Environmental Protection

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Gray Davis
Governor

SDMS DOCID# 1120891

March 5, 2001

Mr. Buddy Hand
ExxonMobil Environmental Remediation
Major Projects – Upstream/Coal and Minerals
601 Jefferson, KT 1244
Houston, TX 77002-79001

SLIC PROGRAM – SOIL CLOSURE
MOBIL JALK FEE PROPERTY
10607 NORWALK BOULEVARD, SANTA FE SPRINGS, CA (SLIC NO. 203; PCA NO.18480)

Dear Mr. Hand,

Your "Jalk Fee Soil Closure" report dated February 12, 2001, requested a soil closure for the above-referenced site. We have reviewed the following site assessment/modeling reports submitted to this Regional Board:

- "Site Closure Report and Risk Assessment" dated November 28, 2000.
- "Vapor Modeling Report Amendment to the TRC Site Closure Report and Risk Assessment" dated January 22, 2001.
- "Clarification of VaporT and Sesoil Model Input Parameters" dated February 5, 2001.
- "Jalk Fee Soil Closure" dated February 12, 2001.

The site encompasses approximately 8.8 acres of undeveloped land, located within the southwest portion of the Santa Fe Springs Oil Field. The site has been used for oil production since the 1920's, and ceased with the recent abandonment of the oil wells, pipelines, and tank farm by the current tenant, Hathaway Oil Company. Various phases of site assessment activities have been completed between 1988 to 2000. The results of the subsurface soil investigations indicate that site soils were contaminated with chlorinated and petroleum hydrocarbons.

On March 1, 1999, the Regional Board issued a soil closure for the petroleum and chlorinated hydrocarbon contamination. In November 2000, approximately 1,800 tons of hydrocarbon contaminated soils were excavated from the site, related to a pending real estate transaction. Subsequently, the Santa Fe Springs Fire Department referred the site to the Regional Board for oversight relevant to the water quality issue. Your "Site Closure Report and Risk Assessment" report dated November 28 2000, transmits information on the soil matrix confirmation sampling activities to verify cleanup of the contaminated soils and risk assessment modeling. In addition, your "Vapor Modeling Report Amendment to the TRC Site Closure Report and Risk Assessment" report dated January 22, 2001 and "Clarification of VaporT and Sesoil Model Input Parameters" report dated February 5, 2001, transmits fate and transport modeling of the contaminants to demonstrate that residual contamination would not significantly impact groundwater. Further, your "Jalk Fee Soil Closure" report dated February 12, 2001, indicate that the site is planned for development, and that approximately 95 percent of the site will be capped, further reducing any impacts to groundwater.

Based on information submitted to date, we concur with your consultant's conclusion that closure is appropriate. We have determined that the chlorinated and petroleum hydrocarbons contaminated soils have been remediated to levels satisfactory to this Regional Board and protective of groundwater. Therefore, no further action is required regarding assessment and/or remediation of the underlying soil at the subject site. However, since the groundwater beneath your site is impacted with chlorinated hydrocarbons, you are required to continue groundwater monitoring.

If you have any questions regarding this matter, please contact Mr. Jimmie Woo at (213) 576-6723 or his e-mail at jwoo@rb4.swrcb.ca.gov.

Sincerely,

Dennis A. Dickerson
Executive Officer

cc: Ms. Brenda Nelson, Santa Fe Springs Fire Department
Mr. Jeff Hensel, TRC Alton Geoscience - Irvine
Mr. Eric Walther, TCC Alton Geoscience - Irvine
Mr. Todd Stanford, TRC Alton Geoscience - Northridge

State of California
Environmental Protection Agency

REMEDIATION SECTION CASE REVIEW FORM

Los Angeles Regional
Water Quality Control Board

Case Reviewer: JW	Unit Chief: BPB	Section Chief: AGH	Division Chief: N/A	AEO: DD	EO: DAD

Date: February 27, 2001	SLIC file no.: 203	Case reviewer: Jimmie Woo Signature: Jimmie Woo

Site Name/Address:	Responsible parties:	Address:	Phone no.:
Mobil Jalk Fee Property **10607 Norwalk Blvd.** **Santa Fe Springs, CA 90670**	Mr. Buddy Hand ExxonMobil	601 Jefferson, KT 1244 Houston, TX 77002-79001	(713)656-9179

I. CASE INFORMATION

Area of Concern	Contaminant Source	Chemicals of Concern	Source Status	Date of Action
1	Oil Field Operation & Adjacent Property	TPH & PCE	Remediated	11/2000

II. SITE CHARACTERIZATION INFORMATION

GW Basin: Los Angeles Coastal Groundwater Basin	Beneficial uses: MUN, IND, AGR, and PROC	Depth to drinking water aquifer: 110 feet	
Distance to nearest municipal supply well: 0.4 mile		Distance between known shallow GW contamination and aquifer: 50	
GW highest depth: 61 feet	GW lowest depth: 71 feet	Well screen interval: N/A	Flow direction: SE
Soil types: Sand and Silt	Max soil depth sampled: 100 ft	AB681 Notification: _X_ yes ___ no	Adjacent to school: ___ yes _X_ no

III. MAXIMUM DOCUMENTED CONTAMINANT CONCENTRATIONS IN SOIL

Contaminant	Soil (mg/kg)		PRGs		Soil Screening Level (mg/kg)	Contaminant	Soil (mg/kg)		PRGs		Soil Screening Level (mg/kg)
	Earliest (1990)	Latest (2000)	Res (mg/kg)	Ind (mg/kg)			Earliest (1990)	Latest (2000)	Res (mg/kg)	Ind (mg/kg)	
PCE	2,500	(0.00065-9.8)	4.7	16	0.05	MTBE	----	0.013	----	----	0.13
Gasoline (C4-C12)	----	5,510	----	----	500	Chromium VI	----	<0.5(1997)	30	64	----
Diesel (C13-C22)	----	4,630	----	----	1,000	TRPH	29,000	13,936	----	----	----
Crude (C23-C40)	----	3,796	----	----	10,000						

IV MAXIMUM DOCUMENTED CONTAMINANT CONCENTRATIONS IN GROUNDWATER

Contaminant	Groundwater (µg/L)		Maximum Contaminant Level (µg/L)	Contaminant	Groundwater (µg/L)		Maximum Contaminant Level (µg/L)
	Earliest (1994)	Latest (2000)			Earliest (date)	Latest (date)	
PCE	330	1,000	5	MTBE	ND (1998)	7	13
Gasoline	ND	<500	----				

V. SOIL REMEDIATION

Method: Recent Excavation (1,775.82 tons)	Duration of remediation: (10/24/00-11/21/00)

VI. GROUNDWATER REMEDIATION

Method: N/A	Duration of remediation: N/A

VII. FREE PRODUCT:

Was free product encountered? No	Has free product been totally recovered? N/A
When was free product recovery project completed? N/A	

VIII. RECOMMENDED ACTION:

Soil Closure only: Yes	Case Closure: No	Solvent Case? Yes
Additional Action Required (i.e.: additional site assessment, remediation, monitoring): Groundwater Monitoring		

IX. COMMENTS AND JUSTIFICATION FOR RECOMMENDED ACTION:

The site is approximately 8.8 acres of undeveloped land located within the southwest portion of the Santa Fe Springs Oil Field. The site has been used for oil production since the 1920's and ceased with the recent abandonment of the oil wells, pipelines and tank farm by the current tenant, Hathaway Oil Company. No structures currently exist on-site. Previously potential point sources on-site were six oil production wells, a former tank battery consisting of six above ground tanks in the northwest corner of the site, former sumps (mud pits) associated with oil drilling and production, oil refuse area (boneyard area), and above ground tanks in the southeast portion of the property.

Various phases of subsurface investigation have been conducted from 1988 to 2000.

In June 1988, the Regional Board approved a remedial action plan. Approximately 2,600 tons of petroleum hydrocarbons and chlorinated solvent contaminated soils were excavated from the site. A site closure report was submitted dated October 14, 1998, summarizing remediation activities and confirmation soil sampling.

In January 1994, three monitoring wells were installed to determine the water quality beneath the site.

In May 1994, soil treatment was initiated in bioremediation cells. Soil in the remediation cells was derived from properties in the Santa Fe Springs Oil Field including 720 cubic yard of soil from Jalk Fee.

Between November 1990 and September 1991, 27 soil borings were advanced to depths ranging from 22 to 55 feet bgs. Analytical test results identified PCE up to 2,500 mg/kg and TRPH up to 29,000 mg/kg.

Between July and September 1994, 18 geoprobe soil borings were advanced from 30-48 feet bgs in the southeastern portion of the site. Analytical test results identified PCE up to 55,000 mg/kg. TRPH was detected up to 27,000 mg/kg.

In December 1995, 38 soil borings were drilled up to depths of 60 feet bgs. Analytical test result identified PCE up to 4.1 mg/kg

In 1996, remediation of lead contaminated soil from the boneyard area was completed. In December 1996 a closure was issued by the Department of Toxic Substances Control.

In June and July 1997, 22 geoprobe soil borings were drilled. Analytical test results identified PCE up to 42 mg/kg and TRPH up to 9,100.

An environmental fate and transport analysis was performed and described in the "Site Assessment Report/ Remedial Plan" dated October 10, 1997.

In June 1998, remediation of chlorinated hydrocarbons and petroleum hydrocarbon contaminated soils was conducted. Subsequently, a fate and transport model was completed to show that the residual hydrocarbons left in place posed no risk to the groundwater.

On March 1, 1999, the Regional Board issued a "No Further Action" letter for the soils. However, required continued groundwater monitoring, since the groundwater is impacted with chlorinated hydrocarbons. Based on the conclusion of the model, no additional remediation was required to protect groundwater.

In September and October 2000, Hathaway Oil Company removed petroleum pipelines and the tank battery in the northwest corner of the site.

To facilitate the sale of the Jalk Fee Property, additional soil remediation was undertaken to address the impacted soils. From October 2000 to November 2000, contaminated soils were excavated, in accordance to their remedial action plan dated October 20, 2000 and revised November 8, 2000. The remedial action plan was reviewed and approved by the Santa Fe Springs Fire Department on November 13, 2000. Confirmation soil sample results identified PCE up to 9.8 mg/kg, gasoline (C4-C12) up to 5,510 mg/kg, diesel (C13-C22) up to 4,630 mg/kg, crude (C23-C40) up to 3,796.

"Site Closure Report and Risk Assessment" dated November 28, 2000, was submitted to the Regional Board for oversight and closure relating to water quality. A copy was also submitted to the Santa Fe Springs Fire Department. The Report provided findings of the remedial activities and risk assessment.

On December 19, 2000, the Santa Fe Springs Fire Department sent a letter to the Regional Board referring the site for the water quality issue, however retaining lead role in the human health issue.

On December 26, 2000, the City of Santa Fe Springs Fire Department issued a "No Further Action " letter for the soil with respect to human health issue. However, a deed restriction or notification is required indicating the site may only be used for industrial purposes.

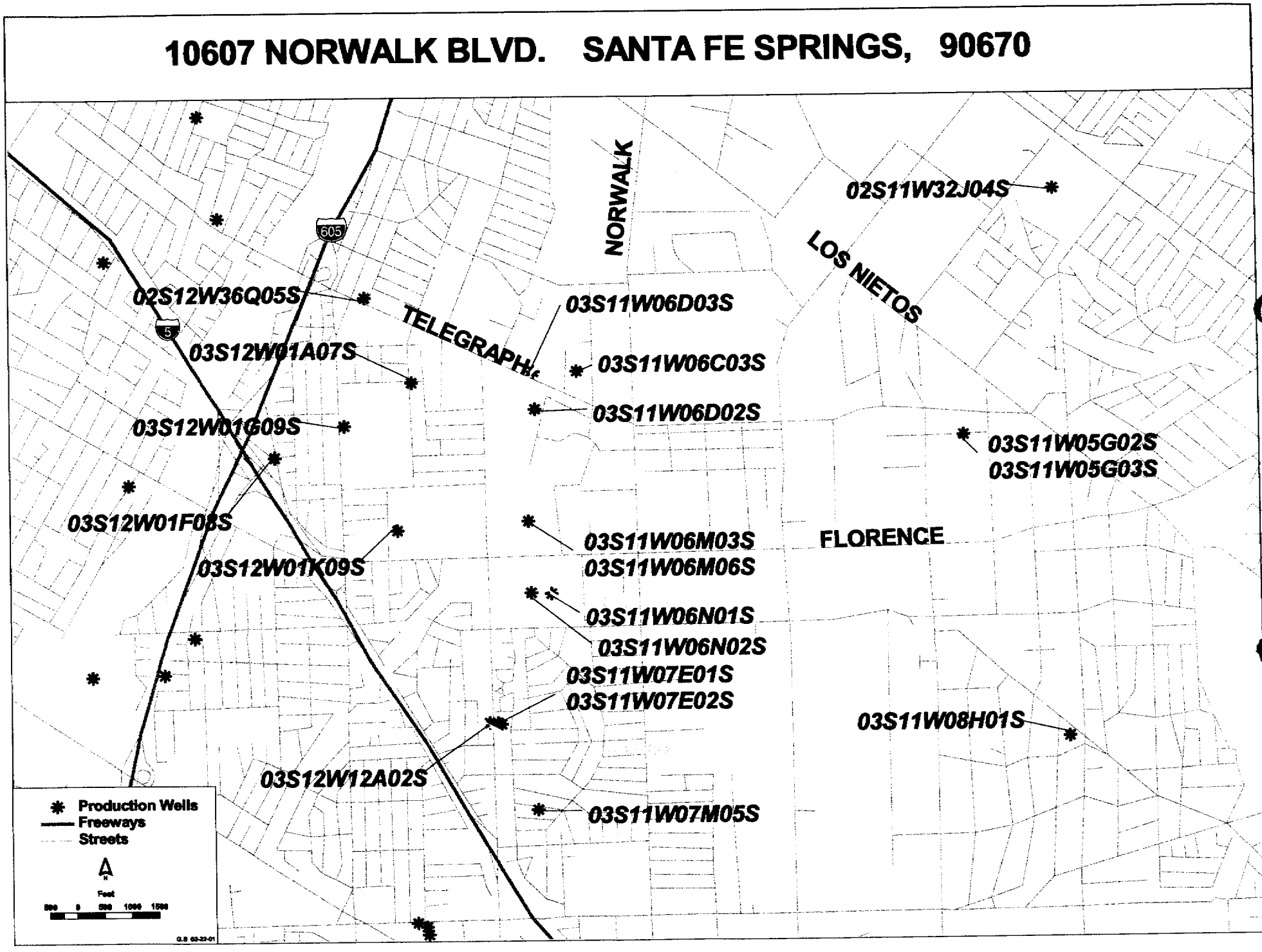
In January 2001, the Regional Board indicated to ExxonMobil that the fate and transport model SESOIL was not adequate for the volatile organic compounds detected on-site and required an alternative model to evaluate the gas-phase transport.

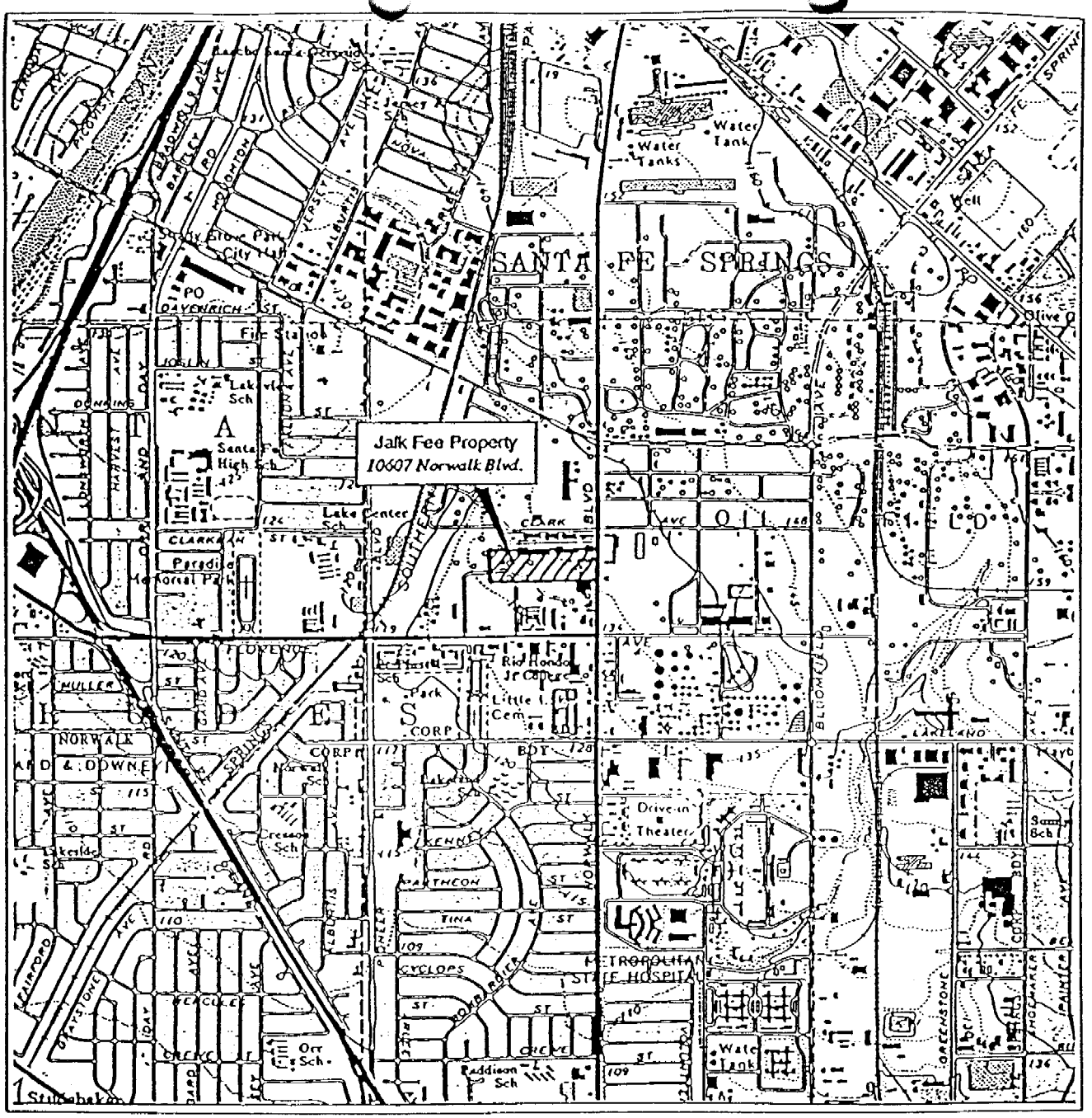
On January 22, 2001, ExxonMobil submitted "Vapor Modeling Report Amendment to the TRC Site Closure Report and Risk Assessment" Dated November 28, 2000. Based on Regional Board's review, additional clarification for the input parameters were required. Subsequently, ExxonMobil submitted "Clarifications of VaporT and Sesoil Model Input Parameters" report dated February 5, 2001. Based on Regional Board review, it appears that the groundwater concentrations from the residual PCE in the soil are of the same order of magnitude of maximum contaminant level for tetrachloroethylene (PCE – 5 µg/L). In addition, SESOIL modeling appears to be adequate in addressing the petroleum hydrocarbons and predicts no impact to groundwater. In addition, groundwater has detected low concentrations of petroleum hydrocarbon constituents since initiation of their groundwater monitoring in 1994 (gasoline up to 450 µg/L, benzene up to 28 µg/L, MTBE up to 7 µg/L)

No historical use of PCE has been documented on the Mobil Jalk Fee property. The source of contamination for the PCE contamination on the ExxonMobil Jalk Fee property appears to be from the adjacent property Continental Heat Treating, Inc. (CHT). CHT has been in operation since 1969 and uses PCE. Preliminary subsurface investigation at the Continental Heat Treating, Inc confirmed detection of PCE in soils and a documented discharge/overflow drain at the border of the Jalk Fee property where majority of the PCE was detected. No groundwater investigation has been conducted at CHT. The Jalk Fee property which upgradient of Continental Heating Treating, Inc. has monitored the groundwater since 1994. Groundwater results indicated highest PCE results downgradient of Jalk Fee site adjacent to Continental Heat Treating, Inc. Continental Heat Treating is in the process of receiving oversight from the Regional Board under cost recovery (Site Cleanup Unit).

The construction plans for the Mobil Jalk Fee property is for industrial warehouses. Their fate and transport model appears to be conservative. The model did not take into account degradation, and that approximately 95 percent of the site will be capped with building slabs, parking areas, sidewalks, and a public street, further reducing the potential for transport of hydrocarbons to the groundwater via infiltration. In addition, since chlorinated hydrocarbons were detected in the groundwater, ExxonMobil will be required to continue groundwater monitoring. Based on their fate and transport model and other information provided to date, staff concur that "no further action" for the soil is appropriate.

10607 NORWALK BLVD. SANTA FE SPRINGS, 90670





SCALE 1: 24,000

N

SOURCE:
United States Geological Survey
7.5 Minute Topographic Map:
Whittier Quadrangle

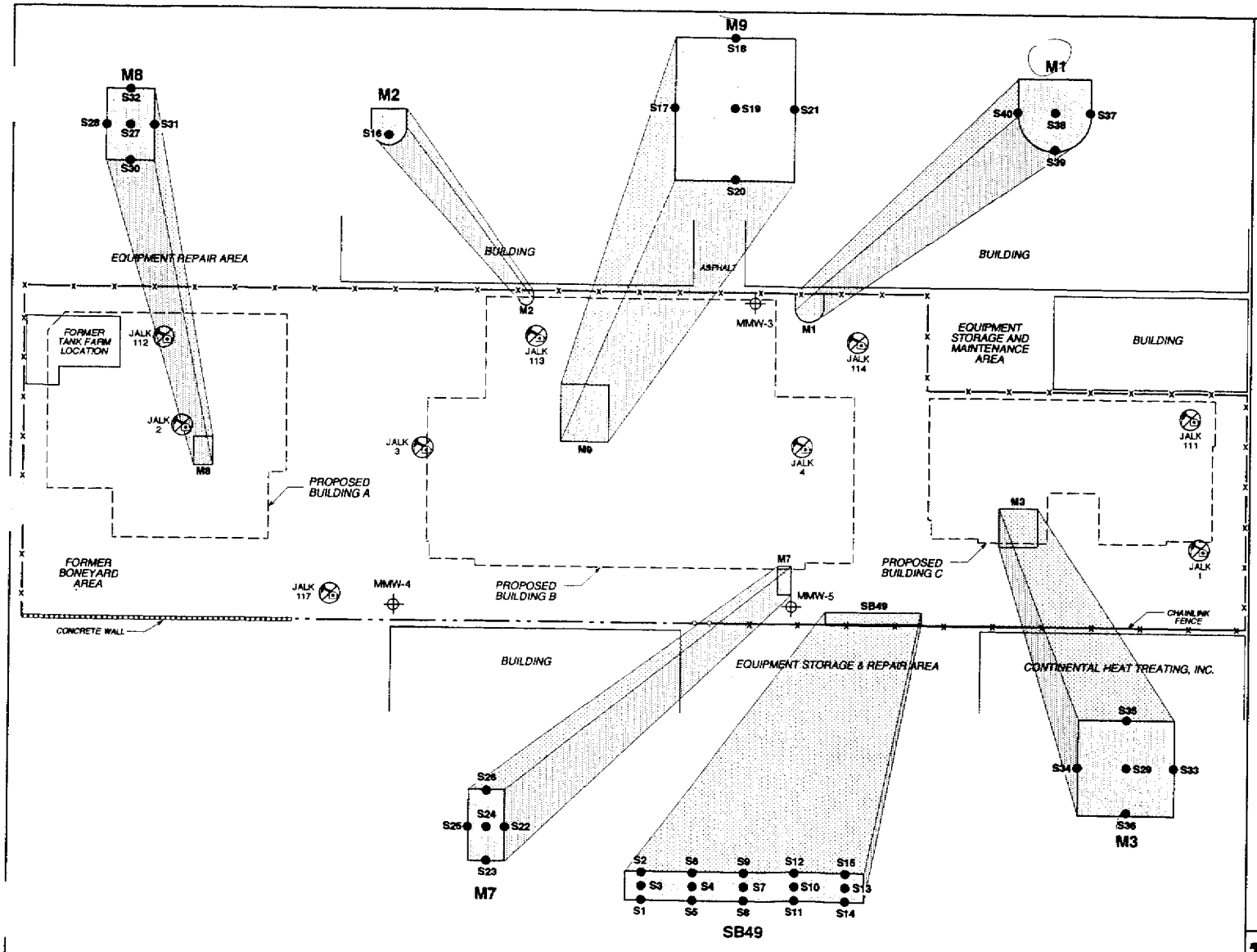
VICINITY MAP

Mobil Jalk Fee Property
10607 Norwalk Boulevard
Santa Fe Springs, California

FIGURE 1

ALTON GEOSCIENCE
Irvine, California

23-0134 3/11/97



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LEGEND

- M9 — Excavation
- S40 — Confirmation Soil Sample
- MMW-5 — Monitoring Well
- JALK 117 — Abandoned Oil Well
- Gate

SITE SCALE (FEET)

0 100 200

ENLARGEMENTS SCALE (FEET)

0 40

NOTES:

Building location and site boundary obtained from drawing by Hill Pinckert Architects, Inc., dated 21 January 2000.
Oil well locations obtained from drawing by Hill Pinckert Architects, Inc., dated 12 September 1999.

Source: Modified from maps created by McLaren-Hart, 1998, and ATC Associates, 2000.

SITE PLOT PLAN and TRC CONFIRMATION SOIL SAMPLE LOCATION MAP

Mobil Jalk Fee Property
10607 Norwalk Boulevard
Santa Fe Springs, California

TRC Alton Geoscience

FIGURE 2

23-0134 Excavs. 11/00 11/1/00 jw

TABLE 1
Hydrocarbon Results of TRC Confirmation Soil Samples
Jalk Fee Property / Santa Fe Springs, California
October and November 2000

SAMPLE NUMBER	DEPTH (fbg) [1]	HYDROCARBON RESULT (mg/kg)		
		C4-C12	C13-C22	C23-C40
EXCAVATION AREA M-1				
JF-M1-S37-EW-8	8.0	ND	ND	ND
JF-M1-S38-B-14	14	334	2,020	3,200
JF-M1-S39-SW-8	8.0	ND	ND	ND
JF-M1-S40-WW-8	8.0	ND	ND	ND
EXCAVATION AREA M-2				
JF-M2-S16-B-10	10	ND	ND	ND
EXCAVATION AREA M-3				
JF-M3-S29-B-16	*16*	*4,958*	*2,677*	*1,909*
JF-M3-S29B-B-19	19	5,510	4,630	3,796
JF-M3-S33-EW-10	10	ND	2.0	ND
JF-M3-S34-WW-14	14	ND	ND	ND
JF-M3-S35-NW-13	13	ND	ND	ND
JF-M3-S36-SW-13	13	ND	ND	ND
EXCAVATION AREA M-7				
JF-M7-S22-EW-8	8.0	ND	ND	ND
JF-M7-S23-SW-8	8.0	ND	ND	ND
JF-M7-S24-B-13	13	ND	ND	ND
JF-M7-S25-WW-8	8.0	ND	ND	ND
JF-M7-S26-NW-8	8.0	ND	ND	ND
EXCAVATION AREA M-8				
JF-M8-S27-B-13	13	ND	ND	ND
JF-M8-S28-WW-10	10	ND	ND	ND
JF-M8-S30-SW-10	10	ND	364	1,069
JF-M8-S31-EW-10	10	ND	32	265
JF-M8-S32-NW-10	10	52	732	984
EXCAVATION AREA M-9				
JF-M9-S17-WW-5	5.0	ND	76	649
JF-M9-S18-NW-5	5.0	ND	59	334
JF-M9-S19-B-7	*7.0*	*738*	*2,346*	*1,709*
JF-M9-S19B-B-16	*16*	*3,797*	*10,949*	*8,480*
JF-M9-S19C-B-24	24	658	1,219	697
JF-M9-S20-SW-5	5.0	ND	42	453
JF-M9-S21-EW-5	5.0	ND	103	326
EXCAVATION AREA SB-49				
JF-SB49-S1-SW-5	5.0	ND	ND	ND
JF-SB49-S2-NW-5	5.0	ND	ND	ND
JF-SB49-S3-B-6	6.0	ND	ND	ND
JF-SB49-S4-B-7	*7.0*	*2,172*	*2,796*	*1,685*
JF-SB49-S4B-B-13	13	ND	17	39
JF-SB49-S5-SW-5	*5.0*	*45*	*340*	*461*
JF-SB49-S5B-SW-10	10	803	1,401	812
JF-SB49-S6-NW-5	5.0	ND	ND	ND
JF-SB49-S7-B-6	*6.0*	*2.0*	*671*	*815*
JF-SB49-S8-SW-5	5.0	ND	2.0	19
JF-SB49-S9-NW-5	*5.0*	*ND*	*792*	*1,096*
JF-SB49-S10-B-7	*7.0*	*ND*	*464*	*1,391*
JF-SB49-S11-SW-5	5.0	ND	399	972
JF-SB49-S12-NW-5	*5.0*	*ND*	*82*	*230*
JF-SB49-S13-B-6	6.0	ND	1.0	12
JF-SB49-S14-SW-5	5.0	ND	1.0	14
JF-SB49-S15-NW-5	5.0	ND	ND	ND

[1] fbg - feet below grade.

Note: Results in blue font italics were excavated.

TABLE 2
VOC Results of TRC Confirmation Soil Samples
Jalk Fee Property / Santa Fe Springs, California
October and November 2000

SAMPLE NUMBER	DEPTH (fbg) [1]	VOCs [2] (mg/kg)			
		c-1,2-DCE [3]	PCE [4]	TCE [5]	Other VOCs [6]
EXCAVATION AREA M-1					
JF-M1-S37-EW-8	8.0	<0.001	<0.001	<0.001	0.00572
JF-M1-S38-B-14	14	<0.001	0.059	<0.001	6.214
JF-M1-S39-SW-8	8.0	<0.001	0.00099	<0.001	0.0076
JF-M1-S40-WW-8	8.0	<0.001	0.00065	<0.001	0.0091
EXCAVATION AREA M-2					
JF-M2-S16-B-10	10	<0.001	<0.001	<0.001	0.00638
EXCAVATION AREA M-3					
JF-M3-S29-B-16	*16*	*<0.001*	*<0.001*	*<0.001*	*145.56*
JF-M3-S33-EW-10	10	<0.001	<0.001	<0.001	0.03347
JF-M3-S34-WW-14	14	<0.001	<0.001	<0.001	0.01271
JF-M3-S35-NW-13	13	<0.001	0.27	<0.001	0.0155
JF-M3-S36-SW-13	13	<0.001	<0.001	<0.001	0.00447
EXCAVATION AREA M-7					
JF-M7-S22-EW-8	8.0	<0.001	0.0031	<0.001	0.0132
JF-M7-S23-SW-8	8.0	<0.001	0.046	<0.001	0.0233
JF-M7-S24-B-13	13	<0.001	0.0054	<0.001	0.08384
JF-M7-S25-WW-8	8.0	<0.001	0.0049	<0.001	0.032
JF-M7-S26-NW-8	8.0	<0.001	0.0041	<0.001	0.00499
EXCAVATION AREA M-8					
JF-M8-S27-B-13	13	<0.001	<0.001	<0.001	ND
JF-M8-S28-WW-10	*10*	*<0.001*	*<0.001*	*<0.001*	*0.2*
JF-M8-S30-SW-10	10	<0.001	<0.001	<0.001	0.0094
JF-M8-S31-EW-10	10	<0.001	<0.001	<0.001	0.00708
JF-M8-S32-NW-10	10	<0.001	<0.001	<0.001	0.1501
EXCAVATION AREA M-9					
JF-M9-S17-WW-5	5.0	<0.001	<0.001	<0.001	0.013
JF-M9-S18-NW-5	5.0	<0.001	<0.001	<0.001	0.011
JF-M9-S19-B-7	*7.0*	*<0.001*	*<0.001*	*<0.001*	*5.207*
JF-M9-S20-SW-5	5.0	<0.001	<0.001	<0.001	0.0162
JF-M9-S21-EW-5	5.0	<0.001	<0.001	<0.001	0.00848
EXCAVATION AREA SB-49					
JF-SB49-S1-SW-5	5.0	0.023	0.0073	<0.001	0.05177
JF-SB49-S2-NW-5	5.0	0.0012	0.0055	<0.001	0.0112
JF-SB49-S3-B-6	6.0	0.00061	0.0099	<0.001	0.0133
JF-SB49-S4-B-7	*7.0*	*8.8*	*31*	*5.9*	*104.2*
JF-SB49-S4B-B-13	13	0.02	1.1	0.0024	ND
JF-SB49-S5-SW-5	*5.0*	*1.4*	*61*	*0.71*	*0.73*
JF-SB49-S5B-SW-10	10	2.0	3.0	0.73	35.74
JF-SB49-S6-NW-5	5.0	0.025	0.4	0.0053	0.03535
JF-SB49-S7-B-6	*6.0*	*<1.0*	*1,600*	*<1.0*	*4.9*
JF-SB49-S7B-B-12	12	0.0065	9.8	0.0065	0.0152
JF-SB49-S8-SW-5	5.0	0.0014	3.2	0.0016	0.0153
JF-SB49-S9-NW-5	*5.0*	*0.033*	*250*	*0.089*	*0.53786*
JF-SB49-S9B-NW-6	6.0	<0.001	0.14	<0.001	0.0071
JF-SB49-S10-B-7	*7.0*	*0.0014*	*2,000*	*0.14*	*0.7609*
JF-SB49-S10B-B-8	8.0	<0.001	2.5	0.0089	0.0229
JF-SB49-S11-SW-5	5.0	<0.001	1,300	0.01	0.52733
JF-SB49-S12-NW-5	*5.0*	*0.00055*	*440*	*0.13*	*0.34907*
JF-SB49-S12B-NW-6	6.0	<0.001	1.7	<0.001	0.00883
JF-SB49-S13-B-6	6.0	<0.001	1.4	<0.001	0.17185
JF-SB49-S14-SW-5	5.0	<0.001	1.1	<0.001	0.23029
JF-SB49-S15-NW-5	5.0	<0.001	0.15	<0.001	0.0815

[1] fbg - feet below grade.

[2] VOCs - volatile organic compounds.

[3] c-1,2-DCE - cis-1,2-dichloroethene.

[4] PCE - tetrachloroethene.

[5] TCE - trichloroethene.

[6] Total remaining VOCs including acetone and methylene chloride which are possible laboratory contaminants.

Note: Results in blue font italics were excavated.

TABLE 3
Lead and Arsenic Results of TRC Confirmation Soil Samples
Jalk Fee Property / Santa Fe Springs, California
October and November 2000

SAMPLE NUMBER	DEPTH (fbg) [1]	TOTAL LEAD (mg/kg)	TOTAL ARSENIC (mg/kg)
EXCAVATION AREA M-1			
JF-M1-S37-EW-8	8.0	6.1	4.31
JF-M1-S38-B-14	14	3.47	2.74
JF-M1-S39-SW-8	8.0	5.34	3.57
JF-M1-S40-WW-8	8.0	5.8	4.29
EXCAVATION AREA M-2			
JF-M2-S16-B-10	10	4.95	4.15
EXCAVATION AREA M-3			
JF-M3-S29-B-16	*16*	*4.21*	*4.31*
JF-M3-S33-EW-10	10	2.48	1.81
JF-M3-S34-WW-14	14	2.67	2.15
JF-M3-S35-NW-13	13	4.65	4.93
JF-M3-S36-SW-13	13	3.2	2.96
EXCAVATION AREA M-7			
JF-M7-S22-EW-8	8.0	4.82	4.16
JF-M7-S23-SW-8	8.0	4.84	4.02
JF-M7-S24-B-13	13	2.81	2.78
JF-M7-S25-WW-8	8.0	4.64	4.65
JF-M7-S26-NW-8	8.0	5.85	4.64
EXCAVATION AREA M-8			
JF-M8-S27-B-13	13	4.63	5.36
JF-M8-S28-WW-10	10	5.5	6.23
JF-M8-S30-SW-10	10	7.75	2.35
JF-M8-S31-EW-10	10	6.01	3.69
JF-M8-S32-NW-10	10	15.1	2.47
EXCAVATION AREA M-9			
JF-M9-S17-WW-5	5.0	4.25	3.51
JF-M9-S18-NW-5	5.0	3.94	2.56
JF-M9-S19-B-7	*7.0*	*4.39*	*2.97*
JF-M9-S20-SW-5	5.0	4.22	3.51
JF-M9-S21-EW-5	5.0	4.1	3.52
EXCAVATION AREA SB-49			
JF-SB49-S1-SW-5	5.0	4.63	3.85
JF-SB49-S2-NW-5	5.0	4.29	3.22
JF-SB49-S3-B-6	6.0	4.32	4.51
JF-SB49-S4-B-7	*7.0*	*4.04*	*4.54*
JF-SB49-S5-SW-5	*5.0*	*4.06*	*3.61*
JF-SB49-S6-NW-5	5.0	5.12	4.07
JF-SB49-S7-B-6	*6.0*	*4.21*	*4.67*
JF-SB49-S8-SW-5	5.0	4.36	3.56
JF-SB49-S9-NW-5	*5.0*	*4.11*	*3.43*
JF-SB49-S10-B-7	*7.0*	*4.31*	*4.81*
JF-SB49-S11-SW-5	5.0	4.31	4.44
JF-SB49-S12-NW-5	*5.0*	*4.26*	*3.56*
JF-SB49-S13-B-6	6.0	4.65	4.36
JF-SB49-S14-SW-5	5.0	4.76	4.12
JF-SB49-S15-NW-5	5.0	4.39	4.29

[1] fbg - feet below grade.
Note: Results in blue font italics were excavated.

TABLE 2
VAPOUR-T MODELING (1)
JALK FEE PROPERTY

PARAMETER	UNITS	RUN	
		AXISYMMETRIC	CARTESIAN (2)
		Jalk9 (1B)	Jalk10xy (1B)
LENGTH OF MODEL RUN (3)	days	10,884	7,040
PEAK PCE TRANSPORTED INTO GROUNDWATER (4)	kg/12 hr time step	3.81E-05	7.5E-06
WIDTH OF PCE COLUMN (5)	feet	69	122
	meters	21	37
GROUNDWATER FLOW BENEATH PCE COLUMN (6,7,8)	liters/ year	8.48E+06	1.49E+07
POTENTIAL PCE CONCENTRATION IN GROUNDWATER	ug/l	3.3	0.4

1) These runs differ from those contained in January 22, 2001 transmittal by: a) a revision of initial concentration from total in all phases of a soil sample to just that in the vapour phase in the soil pores (in percent of an atmosphere);

b) refinement of K, dh/dl, H, k, T, and foc.

2) Mass transported into groundwater from the Vapour-T cartesian run is multiplied by 2 for left-right mirror-image symmetry of grid, and by 37 for number of meter "slices" of side length "into the paper" for simulation.

3) VapourT runs until change in outputs between time steps stabilize (i.e., become le

4) Amount of PCE transported into ground water stays at zero until first PCE reaches 70 ft bgs, then increases to a maximum, which is used below.

5) Width is transverse or perpendicular to ground water flow direction.

6) Hydraulic conductivity of groundwater used in SESOIL and V-LEACH (cm/sec) = 6E-02

7) Hydraulic gradient (head) of groundwater used in SESOIL (-) = 0.007

8) Thickness of groundwater for mixing (well screen length in feet) = 10

TABLE 1
CALCULATION OF INITIAL PCE VAPOR CONCENTRATION FROM MEASURED TOTAL CONCENTRATION IN SOIL

JALK FEE PROPERTY

EQUATIONS	SOURCE OR RATIONALE
Cv eq (mg/m3)= ((H * Csoil * BD)/(Pw + Ks*BD + H*Pa)) * CF1 Cv eq (atm)= (Cv eq (mg/m3) * R * T) / (MW * CF2) Ks = foc * Koc	Ideal Gas Law

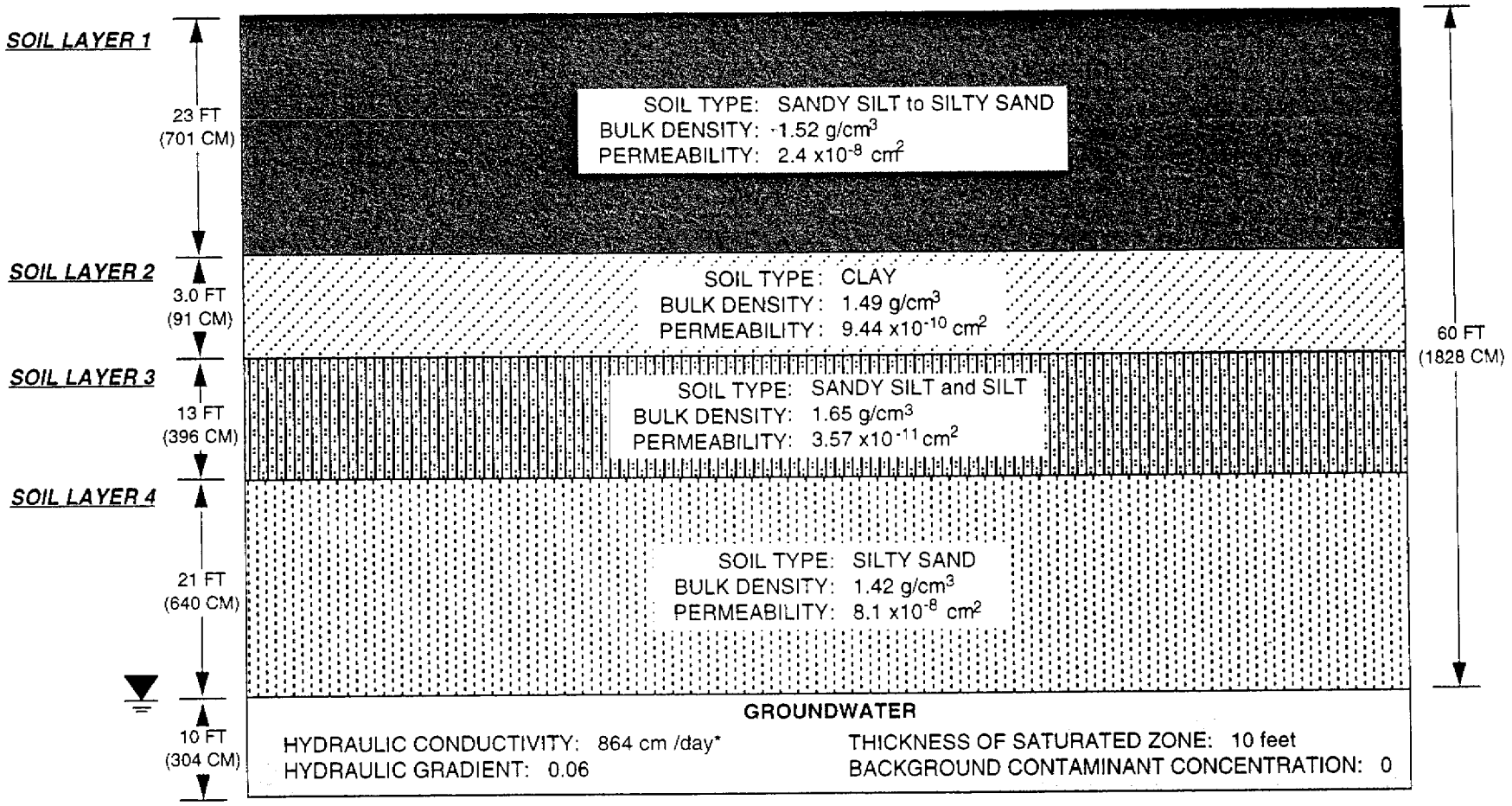
SYMBOLS AND DESCRIPTIONS	UNITS	LAYER				SOURCE OR RATIONALE
		1 (Top)	2	3	4 (Bottom)	
Csoil = Concentration of PCE in Soil	mg/kg	9.94E-01	9.20E-02	2.23E-01	2.20E-02	(From site data)
Csoil = Concentration of PCE in Soil	g /g-soil	9.94E-07	9.20E-08	2.23E-07	2.20E-08	(Conversion applied)
H = Henry's Law Constant	unitless	0.546	0.546	0.546	0.546	Davis and Olsen (1990)
BD = Bulk Density of Soil	g soil/cm3 soil	1.52	1.49	1.65	1.42	(From SESOIL Model run)
Pw = Water-Filled Porosity of Soil	cm3 water/cm3 soil	0.09	0.09	0.09	0.09	(site specific; from SESOIL Model run)
foc = Fraction of Organic Carbon in Soil	g carbon/g soil	0.0093	0.0093	0.0093	0.0093	(Site specific)
Koc = Carbon-Water Partition Coefficient of PCE	cm3 water/g carbon	364	364	364	364	(Pankow, 1988)
Ks = Sorption Coefficient	(g/gsoil)/(g/cm3 water)	3.39	3.39	3.39	3.39	(by equation)
Pa = Air-Filled Porosity of Soil	cm3 air/cm3 soil	0.19	0.19	0.19	0.19	(site specific; from SESOIL Model run)
CF1 = Correction Factor	(mg/m3)/(g/cm3)	1.00E+09	1.00E+09	1.00E+09	1.00E+09	(by definition)
Cv eq = Equilibrium Vapor Concentration [1]	mg/m3	1.55E+02	1.43E+01	3.48E+01	3.41E+00	(by equation)
R = Universal gas law constant	atm m3/mol K	8.21E-05	8.21E-05	8.21E-05	8.21E-05	(by definition)
K = Temperature	K	2.91E+02	2.91E+02	2.91E+02	2.91E+02	64F, the long-term average temp. in Los Angeles
MW = Molecular Weight of PCE	g/g mol	1.6585E+02	1.6585E+02	1.6585E+02	1.6585E+02	Chemical specific
CF2 = Conversion Factor	mg/g	1.00E+03	1.00E+03	1.00E+03	1.00E+03	(by definition)
Cv eq = Equilibrium Vapor Concentration [1]	atm	2.22E-05	2.06E-06	5.00E-06	4.91E-07	
Cv eq = Equilibrium Vapor Concentration [1]	% of atm	2.22E-03	2.06E-04	5.00E-04	4.91E-05	

1) Vapor Pressure at Saturation = 13.7 mm Hg or 0.018 atm. Therefore, Cv eq (atm) cannot exceed 0.018 atm = 1.8 % of atm = 125,000 mg/m3.

Davis, Andy and Roger L. Olsen. *Predicting the Fate and Transport of Organic Compounds in Groundwater*, Part 2, HMC, pages 18-37, July/August 1990.

METEOROLOGICAL CONDITIONS
BREA DAM

UNCAPPED, EXPOSED SOIL SURFACE



CONCEPTUAL OVERVIEW OF SESOIL MODELING

Jalk Fee Properties
10607 Norwalk Boulevard
Santa Fe Springs, California

TRC Alton Geoscience

FIGURE F-1

T. F-1
SESOIL INPUT PARAMETERS FOR PCE

Parameters	Units	Reference, Assumptions, and/or Comments	PCE	
CLIMATE AND SIMULATION TIME INPUT PARAMETERS				
			1997 Data	2000 Data
Weather Station	[-]	From SESOIL climate database	Brea Dam	Brea Dam
Number of years of climate data	[yr]	Default value	1	1
Air Temperature	[Deg C]	From SESOIL climate database, default value	Varies according to weather database	Varies according to weather database
Number of years of simulation	[yr]	Professional judgment	150	150
PARAMETERS AVERAGED ACROSS ENTIRE SOIL COLUMN TO GROUNDWATER				
Bulk Density	[g/cm3]	Site specific average of 12 measurements from HS-1 through HS 4	1.49	1.49
Disconnectedness Index	[-]	From SESOIL soils database, assumed loamy sand soil column	3.9	3.9
Effective Porosity	[fraction]	From SESOIL soils database, corresponds with loamy sand	0.28	0.28
Total organic carbon content	(%)	Site specific average of 11 measurements from HS-1 through HS 4	0.093	0.093
Freundlich Isotherm exponent, FRN	[-]	Assumes sorption isotherm is linear; Lyman, et al., 1992	1	1
CONTAMINANT PROPERTIES				
Solubility	[mg/l]	From SESOIL chemical database	240.00	240.00
Diffusion Coefficient in Air	[cm2/sec]	From SESOIL chemical database	0.00739	0.00739
Henry's Constant	[m3-atm/mol] @ 25°C	From SESOIL chemical database	0.0174	0.0174
Adsorption coeff. on organic carbon, Koc	[(ug/g-oc)/(ug/ml)]	From SESOIL chemical database	364	364
Molecular weight	[g/mol]	From SESOIL chemical database	165.83	165.83
Neutral hydrolysis (l/day), KNH	[1/day]	Parameter not included in model simulations	--	--
Base hydrolysis (l/mol/day), KBH	[l/mol/day]	Parameter not included in model simulations	--	--
Acid hydrolysis, KAH	[l/mol/day]	Parameter not included in model simulations	--	--
Liquid Phase Biodegradation Rate	[1/day]	Parameter not included in model simulations, assumed no contaminant decay	--	--
Solid Phase Biodegradation Rate	[1/day]	Parameter not included in model simulations, assumed no contaminant decay	--	--
Ligand stability const., SK	[-]	Parameter not included in model simulations	--	--
Moles ligand per model compound, B	[mol/mol]	Parameter not included in model simulations	--	--
Molecular weight of the ligand (g/mole), MWTLIG	[g/mol]	Parameter not included in model simulations	--	--
APPLICATION DATA				
Number of years	[yr]	Calculates instantaneous load for first year and zero load for the second.	2	2

Tat -1

SESOIL INPUT PARAMETERS FOR PCE

Parameters	Units	Reference, Assumptions, and/or Comments	PCE	
Number of soil layers	[-]	Layer 1, 23 feet of silty sand and sandy silt; Layer 2, 3 feet of clay; Layer 3, 13 feet of silt; and Layer 4, 21 feet of silty sand and sand.	4	4
Application Area	cm2	See figures of estimated lateral extent of impacted soil, used 10 ppb contour of each contaminant to estimate area of impacted soil	13,935,456	13,935,456
Loading Type	[ug/cm2/day]	For modeling purposes assumed contaminant currently in soil is the only potential source of contaminant to groundwater.	Instantaneous	Instantaneous
LAYER 1				
Description		Sandy silt to silty sand: impacted soil extends from 0 to 23 feet below grade (fbg)		
Thickness	cm	23 feet	701	701
Number of Sublayers		one	1	1
Initial contaminant concentration	[ug/g]	Average contaminant concentration of samples above 10 ug/Kg	0.212	0.994
Bulk Density	g/cm3	Site specific average of samples HS-1 through HS-4 @ 16 fbg	1.52	1.52
Loading	ug/cm2	Assumed instantaneous loading	--	--
Intrinsic Permeability	cm2	Site specific average of samples HS-1 through HS-4 @ 16 fbg	2.40E-08	2.40E-08
Organic Carbon Content, TOC	[%]	Ratio of TOC in two layers, no input for first layer	--	--
Adsorption coeff., Kd	(ug/g)/(ug/ml)	Calculated by SESOIL model using input values for Koc and TOC	--	--
LAYER 2				
Description		Clay: impacted soil extends from 23 to 26 fbg		
Thickness	cm	3 feet	91	91
Number of Sublayers		one	1	1
Initial contaminant concentration	[ug/g]	Average contaminant concentration of samples above 10 ug/Kg	0.092	0.092
Bulk Density	g/cm3	Site specific average of samples HS-2 through HS-4 @ 21 or 26 fbg	1.49	1.49
Loading	ug/cm2	Assumed instantaneous loading	--	--
Intrinsic Permeability	cm2	Site specific average of samples HS-2 through HS-4 @ 21 or 26 fbg	9.44E-10	9.44E-10
Organic Carbon Content, TOC	[%]	Ratio of average site specific organic carbon content measurements from first and second layers	0.1	0.1
Adsorption coeff., Kd	(ug/g)/(ug/ml)	Calculated by SESOIL model using input values for Koc and TOC	--	--
LAYER 3				
Description		Sandy silt and silt: impacted soil which extends from 26 to 39 fbg.		
Thickness	cm	13 feet	396	396
Number of Sublayers		one	1	1
Initial contaminant concentration	[ug/g]	Average contaminant concentration of samples above 10 ug/Kg	0.223	0.223
Bulk Density	g/cm3	Site specific average of samples HS-1 @ 36 fbg	1.65	1.65
Loading	ug/cm2	Assumed instantaneous loading	--	--

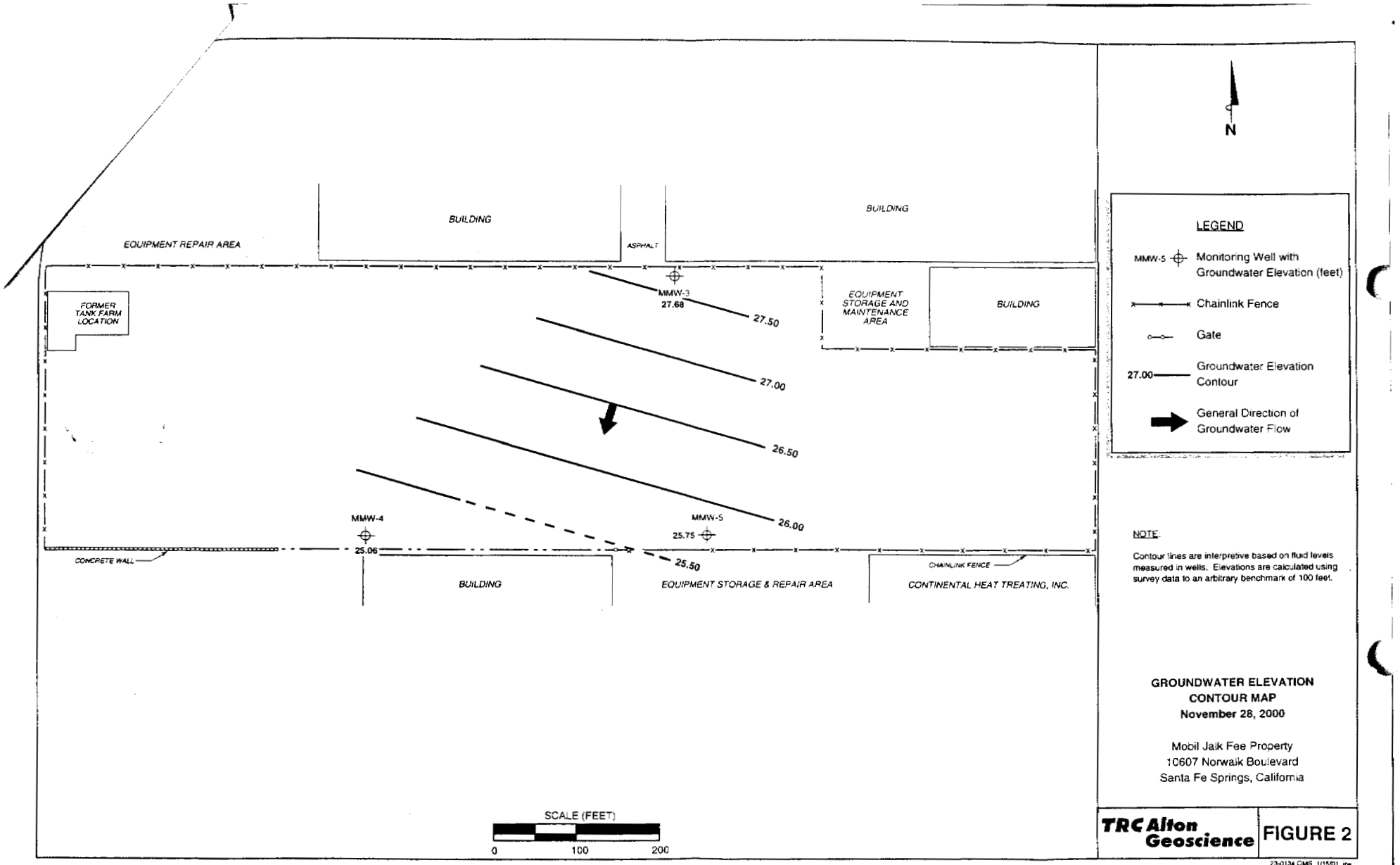
Ta F-1

SESOIL INPUT PARAMETERS FOR PCE

Parameters	Units	Reference, Assumptions, and/or Comments	PCE	
Intrinsic Permeability	cm2	Site specific average of samples HS-1 @ 36 fbg	3.57E-11	3.57E-11
Organic Carbon Content, TOC	[%]	Ratio of average site specific organic carbon content measurements from second and third layers	0.4	0.4
Adsorption coeff., Kd	(ug/g)/(ug/ml)	Calculated by SESOIL model using input values for Koc and TOC	--	--
LAYER 4				
Description		Silty sand: impacted soil extends from 39 to 60 fbg.		
Thickness	cm	21 feet	640	640
Number of Sublayers		ten (allows conc. dist. within 1 ft. of water table)	10	10
Initial contaminant concentration	[ug/g]	Average contaminant concentration of samples above 10 ug/Kg	0.022	0.022
Bulk Density	g/cm3	Site specific average of samples HS-1 through HS-4 @ 51 or 56 fbg	1.42	1.42
Loading	ug/cm2	Assumed instantaneous loading	--	--
Intrinsic Permeability	cm2	Site specific average of samples HS-1 through HS-4 @ 51 or 56 fbb	8.10E-08	8.10E-08
Organic Carbon Content, TOC	[%]	Ratio of average site specific organic carbon content measurements from third and fourth layers	1.0	1.0
Adsorption coeff., Kd	(ug/g)/(ug/ml)	Calculated by SESOIL model using input values for Koc and TOC	--	--
GROUNDWATER PARAMETERS FOR MIXING ZONE - SUMMERS MODEL				
Saturated hydraulic conductivity	[cm2/day]	Range for silty sand (Freeze and Cherry, 1979).	864	864
Horizontal hydraulic gradient	[-]	Calculated from groundwater elevation contours from April 1996 (McLaren Hart, July 1996)	0.06	0.06
Thickness of groundwater mixing zone	[cm]	Assumes 10 feet, the approximate saturated length of a typical monitoring well screen interval.	305	305
Width of impacted zone perpendicular to groundwater flow	[cm]	Approximate width of estimated lateral extent of impacted soil perpendicular to groundwater flow	5334	5334
Target compound background concentration in groundwater	[ug/ml]	Assumed the regional groundwater is not impacted.	0	0
Output from simulation	[ug/ml]	Maximum concentration and time of impact to groundwater	**1.5×10^{-3} ug/ml at year 119**	**4.0×10^{-3} ug/ml at year 128**

Notes:

[-] = dimensionless
yr = year
sec = second
g = gram
ug = microgram
l = liter
ml = milliliter
mol = mole
atm = atmosphere
fbg = feet below grade
mg = milligram
cm = centimeter
m = meter



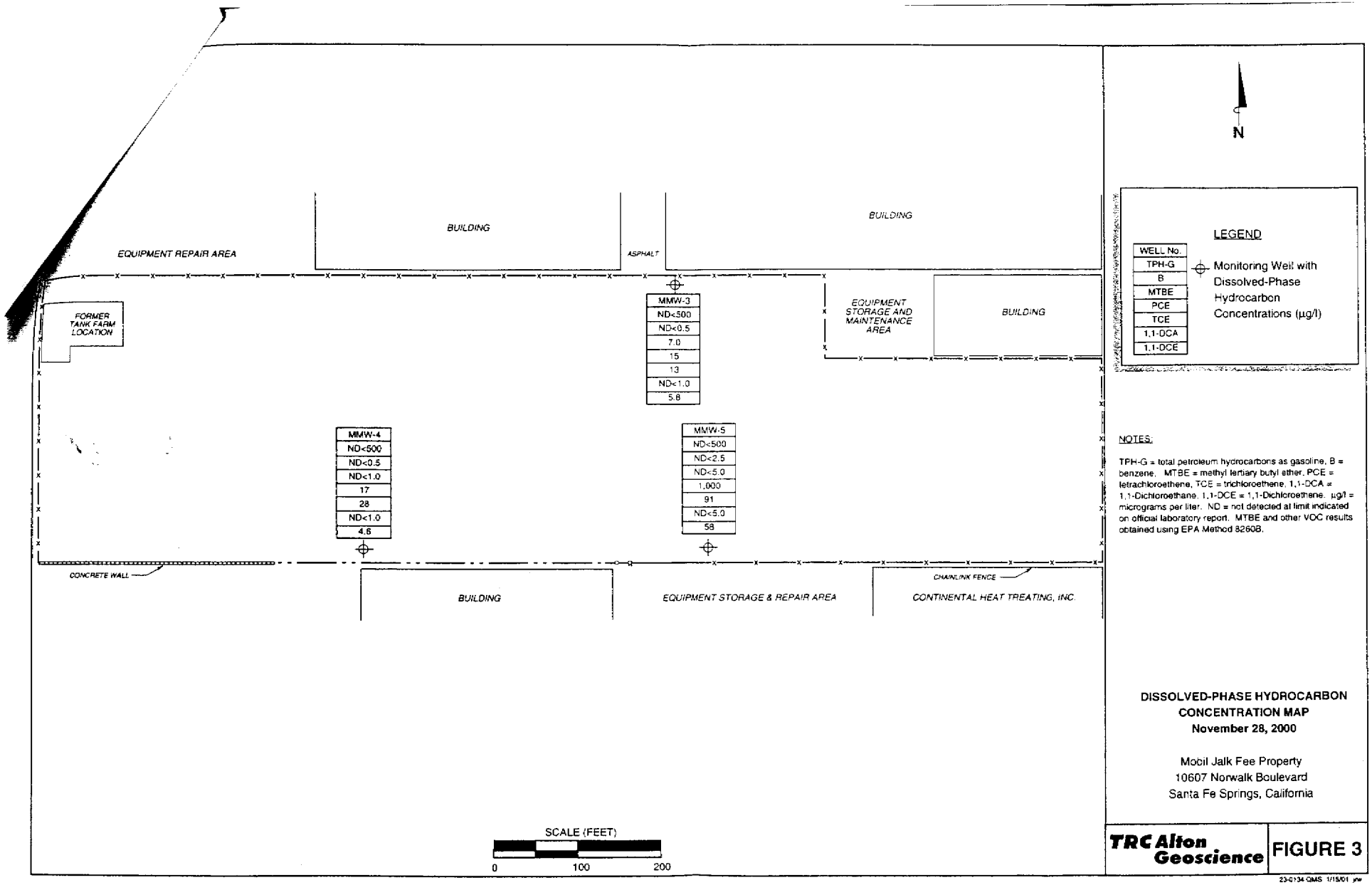
GROUNDWATER ELEVATION CONTOUR MAP
November 28, 2000

Mobil Jalk Fee Property
10607 Norwalk Boulevard
Santa Fe Springs, California

TRC Alton Geoscience

FIGURE 2

23-0134 GMS 1/15/01 jrw



NOTES:

TPH-G = total petroleum hydrocarbons as gasoline, B = benzene, MTBE = methyl tertiary butyl ether, PCE = tetrachloroethene, TCE = trichloroethene, 1,1-DCA = 1,1-Dichloroethane, 1,1-DCE = 1,1-Dichloroethene, µg/l = micrograms per liter. ND = not detected at limit indicated on official laboratory report. MTBE and other VOC results obtained using EPA Method 8260B.

DISSOLVED-PHASE HYDROCARBON CONCENTRATION MAP
November 28, 2000

Mobil Jalk Fee Property
10607 Norwalk Boulevard
Santa Fe Springs, California

TRC Alton Geoscience | **FIGURE 3**

23-0134 QMS 1/15/01 jw

Table 1

GROUNDWATER ELEVATION AND LABORATORY ANALYSIS RESULTS
March 1994 through December 2000
Jalk Fee Property

Well ID	Date	Top of Casing Elevation	Depth to Water (fbg)	Groundwater Elevation (fbg)	TPH-G (µg/l)	Benzene (µg/l)	Toluene (µg/l)	Ethyl-benzene (µg/l)	Total Xylenes (µg/l)	MTBE (µg/l)	PCE (µg/l)	TCE (µg/l)	1-1, DCA (µg/l)	1,1-DCE (µg/l)	c-1,2-DCE (µg/l)
MMW-3	03/15/94	134.26	64.92	69.34	ND	4	13	26	101	--	5	25	2	10	--
	06/22/94	134.26	63.08	71.18	ND	ND	ND	ND	ND	--	4	24	2	8	--
	09/16/94	134.26	64.34	69.92	ND	ND	3	ND	6	--	ND	12	ND	3	--
	12/16/94	134.26	66.21	68.05	ND	ND	8	2	8	--	3	17	2	5	--
	03/08/95	134.26	64.95	69.31	ND	28	28	2	18	--	4	20	2	2	--
	03/26/97	99.17	62.25	36.92	ND	ND	ND	ND	ND	--	12	23	2	7	--
	08/03/98	99.17	61.12	38.05	ND	ND	ND	ND	ND	ND	8	21	2	6	--
	10/22/98	99.17	62.07	37.1	--	--	--	--	--	--	--	--	--	--	--
	05/02/00	99.17	70.94	28.23	ND	ND	ND	ND	ND	ND	5.0	16	1.8	9.2	--
	06/06/00	99.17	70.69	28.48	ND	ND	ND	ND	ND	ND	3.2	12	1.4	5.6	--
	08/31/00	99.17	70.67	28.5	ND < 500	ND < 0.50	ND < 1.0	ND < 1.0	ND < 2.0	1.9	4.4	15	1.7	6.5	--
	11/28/00	99.17	71.49	27.68	ND < 500	ND < 0.50	ND < 1.0	ND < 1.0	ND < 2.0	7.0	15.0	13	ND < 1.0	5.8	ND < 1.0
MMW-4	03/15/94	131.4	64.36	67.04	ND	ND	4	10	38	--	4	18	ND	2	--
	06/22/94	131.4	62.73	68.67	ND	ND	ND	ND	ND	--	2	16	ND	ND	--
	09/16/94	131.4	64.32	67.08	ND	ND	ND	ND	ND	--	ND	6	ND	ND	--
	12/16/94	131.4	66.10	65.3	ND	ND	7	3	9	--	1	6	ND	ND	--
	03/08/95	131.4	65.38	66.02	ND	2	2	ND	1	--	5	9	ND	ND	--
	03/26/97	96.34	61.57	34.77	ND	ND	ND	ND	ND	--	4.2	4	ND	ND	--
	08/03/98	96.34	60.86	35.48	ND	ND	ND	ND	ND	ND	2	4	ND	ND	--
	10/22/98	96.34	61.93	34.41	--	--	--	--	--	--	--	--	--	--	--
	05/02/00	96.34	70.57	25.77	ND	ND	ND	ND	ND	ND	4.4	12	1.7	1.8	--
	06/06/00	96.34	70.46	25.88	ND	ND	ND	ND	ND	ND	5.6	15	2.1	2.5	--
	08/31/00	96.34	70.58	25.76	ND < 500	ND < 0.50	ND < 1.0	ND < 1.0	ND < 2.0	ND < 1.0	6.7	17	1.9	2.0	--
	11/28/00	96.34	71.28	25.06	ND < 500	ND < 0.50	ND < 1.0	ND < 1.0	ND < 2.0	ND < 1.0	17	28	ND < 1.0	4.6	3.4
MMW-5	03/15/94	133.38	66.26	67.12	ND	ND	ND	11	37	--	330	60	ND	5	--
	06/22/94	133.38	64.45	68.93	ND	ND	ND	ND	ND	--	930	100	ND	ND	--
	09/16/94	133.38	65.61	67.77	ND	ND	ND	ND	ND	--	830	82	ND	ND	--
	12/16/94	133.38	67.34	66.04	ND	ND	1	2	1	--	1,400	140	ND	5	--
	03/08/95	133.38	66.16	67.22	ND	ND	ND	ND	ND	--	2,200	180	ND	ND	--
	03/26/97	98.33	63.45	34.88	400	ND	ND	ND	ND	--	1,100	88	ND	ND	--
	10/22/98	98.33	63.34	34.99	ND	ND	0.40	ND	0.60	ND	--	--	--	--	--
	11/20/98	98.33	63.59	34.74	450	3	3.00	ND	1.00	ND	660	91	ND	9	--
	05/02/00	98.33	71.95	26.38	ND	ND	ND	ND	ND	ND	660	90	3.4	39	--
	06/06/00	98.33	71.79	26.54	ND	ND	ND	ND	ND	ND	100	24	ND	19	--
	09/15/00	98.33	71.86	26.47	136	ND < 2.5	ND < 5.0	ND < 5.0	ND < 10	ND < 5.0	390	52	3.1	41	--
	11/28/00	98.33	72.58	25.75	ND < 500	ND < 2.5	ND < 5.0	ND < 5.0	ND < 10	ND < 5.0	1,000	91	ND < 5.0	58	9.3

Notes:
- PCE = tetrachloroethene
- TPH-G = total petroleum hydrocarbons with gasoline distinction
- MTBE = methyl tertiary butyl ether
- TCE = trichloroethene
- 1,1-DCA = 1,1-dichloroethane
- 1,1-DCE = 1,1-dichloroethene
- fbg = feet below grade
- µg/l = micrograms per liter
- -- = not analyzed, measured, or collected